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(71) Applicant *(for all designated States except US)*: ENVENTURE GLOBAL TECHNOLOGY [US/US]; 16200 A Park Row, Houston, TX 77084 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: COSTA, Scott [US/US]; 2011 Willow Point, Kingwood, TX 77330 (US). RING, Lev [US/US]; 14126 Heatherhill Place, Houston, TX 77077 (US). MENCHACA, Jose [US/US]; 9800 Pagewood Lane, Number 210, Houston, TX 77042 (US).

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(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

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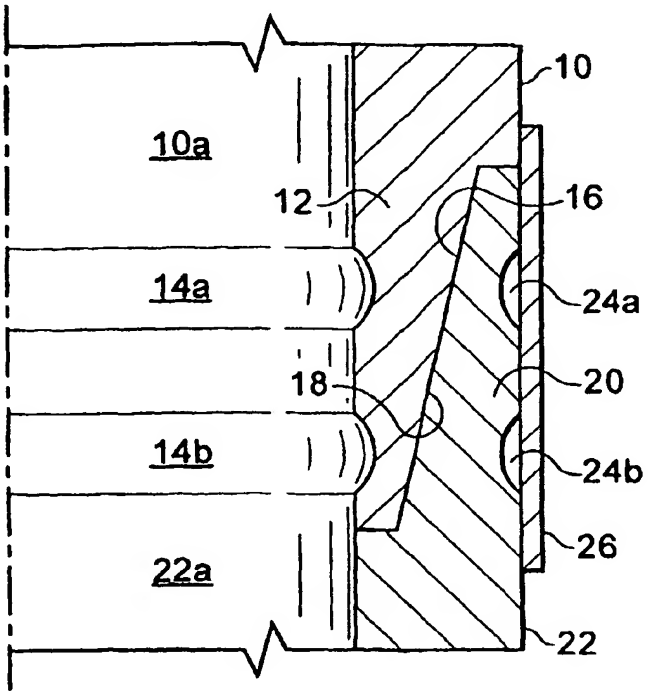
[Continued on next page]

(54) Title: THREADED CONNECTION FOR EXPANDABLE TUBULARS



(57) Abstract: A threaded connection for expandable tubulars. There is a first tubular (10) with external threads (16) and a second tubular (22) with matching internal threads. Each of these tubular has stress concentration grooves (14a, 14b, 24a, 24b). There is a sleeve (26) that goes over the connection between the threaded portions of the tubulars. After connection these tubulars can be expanded downhole in a wellbore.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US03/25716

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) : E21B 19/16
US CL : 166/380, 207; 285/333
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 166/380, 207, 381, 382, 206; 285/333, 334; 403/297

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,924,745 A (Campbell) 20 July 1999 (20.07.1999), figures 3 and 4, column 3, lines 9 - column 4, line 27.	1, 3-5, 7-9, 11, 12, 15, 17-21
Y	SU 1,756,531 A (KRYZHANOVSKII et al) 28 March 1990 (28.03.1990), Figure 1, abstract.	1, 3-5, 7-9, 11, 12, 15, 17-21
Y	WO 99/23354 (METCALFE) 14 May 1999 (14.05.1999), figure 5, page 11 lines 23-28.	1, 3-5, 7-9, 11, 12, 15, 17-21
A, E	US 6,622,797 B2 (SIVLEY IV) 23 September 2003 (23.09.2003), whole document.	1-12, 15-21
A, E	US 6,607,220 B2 (SIVLEY, IV) 19 August 2003 (19.08.2003), whole document.	1-12, 15-21
A, P	US 6,564,875 B1 (BULLOCK) 20 May 2003 (20.05.2003), whole document.	1-12, 15-21
A	US 2002/0108756 A1 (HARRALL et al) 15 August 2002 (15.06.2002), whole document.	1-12, 15-21
A	US 6,322,109 B1 (CAMPBELL et al) 27 November 2001 (27.11.2001), whole document.	1-12, 15-21
A	US 6,085,838 A (VERCAEMER et al) 11 July 2000 (11.07.2000), whole document.	1-12, 15-21

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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"E" earlier application or patent published on or after the international filing date

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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INTERNATIONAL SEARCH REPORT

PCT/US03/25716

Continuation of B. FIELDS SEARCHED Item 3:
Derwent, JPO, EPO

Terms: Thread, Stress concentrator, stress, expand/expanding, tubular, casing

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[Continued on next page]

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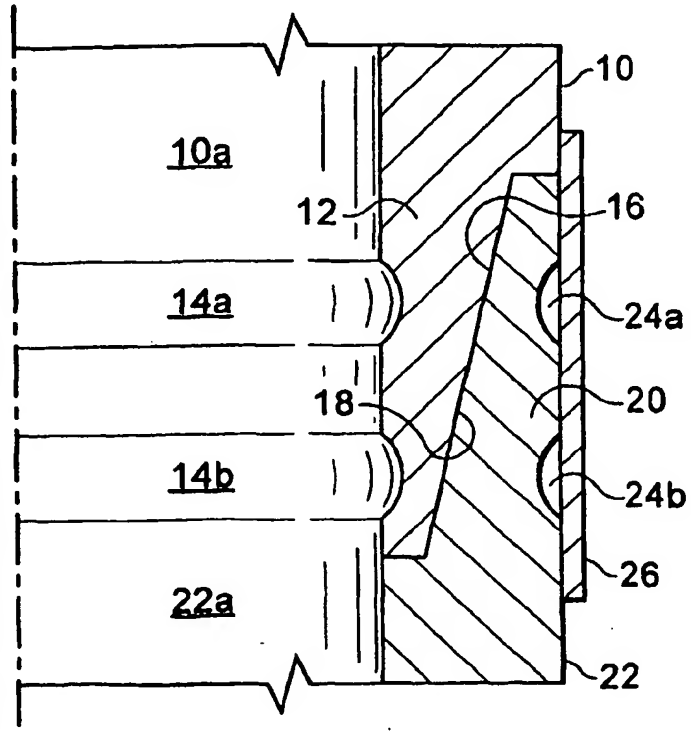

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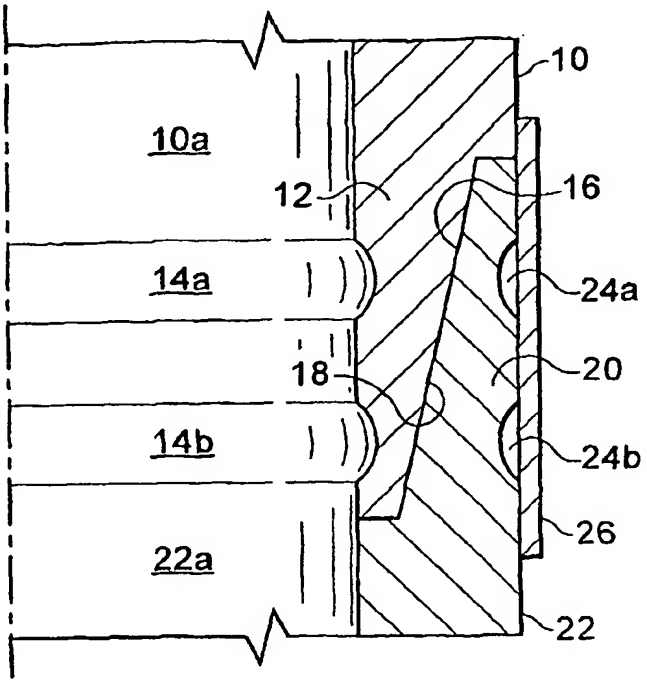
(54) Title: THREADED CONNECTION FOR EXPANDABLE TUBULARS



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AMENDED CLAIMS
received by the International Bureau on 07 March 2005 :
claims 1 to 21 are unchanged, claims 22 to 48 are new

1. An assembly, comprising:
a first tubular member comprising external threads; and
a second tubular member comprising internal threads coupled to the external threads of the first tubular member;
wherein at least one of the first and second tubular members define one or more stress concentrators.

2. The assembly of claim 1, further comprising:
an external sleeve coupled to and overlapping with the ends of the first and second tubular members.

3. The assembly of claim 1, wherein one or more of the stress concentrators comprise surface grooves formed in the surfaces of at least one of the first and second tubular members.

4. The assembly of claim 1, wherein the stress concentrators are defined above the internal and external threads of the first and second tubular members.

5. A method for forming a wellbore casing, comprising:
positioning the assembly of claim 1 within a borehole that traverses a subterranean formation; and
radially expanding and plastically deforming the assembly within the borehole.

6. A method for forming a wellbore casing, comprising:
positioning the assembly of claim 2 within a borehole that traverses a subterranean formation; and
radially expanding and plastically deforming the assembly within the borehole.

7. A method for forming a wellbore casing, comprising:
positioning the assembly of claim 3 within a borehole that traverses a subterranean formation; and
radially expanding and plastically deforming the assembly within the borehole.

8. A method for forming a wellbore casing, comprising:
positioning the assembly of claim 4 within a borehole that traverses a subterranean formation; and
radially expanding and plastically deforming the assembly within the borehole.

9. An apparatus, comprising:
a wellbore that traverses a subterranean formation; and
a wellbore casing positioned within and coupled to the wellbore;
wherein the wellbore casing is coupled to the wellbore by a process comprising:
positioning the assembly of claim 1 within the wellbore; and.
radially expanding and plastically deforming the assembly within the wellbore.

10. An apparatus, comprising:
a wellbore that traverses a subterranean formation; and
a wellbore casing positioned within and coupled to the wellbore;
wherein the wellbore casing is coupled to the wellbore by a process comprising:
positioning the assembly of claim 2 within the wellbore; and
radially expanding and plastically deforming the assembly within the wellbore.

11. An apparatus, comprising:
a wellbore that traverses a subterranean formation; and
a wellbore casing positioned within and coupled to the wellbore;
wherein the wellbore casing is coupled to the wellbore by a process comprising:
positioning the assembly of claim 3 within the wellbore; and
radially expanding and plastically deforming the assembly within the wellbore.

12. An apparatus, comprising:
a wellbore that traverses a subterranean formation; and
a wellbore casing positioned within and coupled to the wellbore;
wherein the wellbore casing is coupled to the wellbore by a process comprising:
positioning the assembly of claim 4 within the wellbore; and
radially expanding and plastically deforming the assembly within the wellbore.

15. A system for forming a wellbore casing, comprising:
means for positioning the assembly of claim 1 within a borehole that traverses a subterranean formation; and
means for radially expanding and plastically deforming the assembly within the borehole.

16. A system for forming a wellbore casing, comprising:
means for positioning the assembly of claim 2 within a borehole that traverses a subterranean formation; and

means for radially expanding and plastically deforming the assembly within the borehole.

17. A system for forming a wellbore casing, comprising:
means for positioning the assembly of claim 3 within a borehole that traverses a subterranean formation; and
means for radially expanding and plastically deforming the assembly within the borehole.

18. A system for forming a wellbore casing, comprising:
means for positioning the assembly of claim 4 within a borehole that traverses a subterranean formation; and
means for radially expanding and plastically deforming the assembly within the borehole.

19. A method of providing a fluid tight seal between a pair of overlapping tubular members, comprising:
forming one or more stress concentrators within at least one of the tubular members; and
radially expanding and plastically deforming the tubular members.

20. The method of claim 19, wherein the tubular members are threadably coupled; and wherein the stress concentrators are formed above the threaded coupling.

21. The method of claim 19, wherein the stress concentrators comprise surface grooves formed in at least one of the tubular members.

22. An assembly, comprising:
a first tubular member comprising external threads;
a second tubular member comprising internal threads coupled to the external threads of the first tubular member; and
an external sleeve coupled to and overlapping with the ends of the first and second tubular members;
wherein at least one of the first and second tubular members define one or more stress concentrators.

23. The assembly of claim 22, wherein one or more of the stress concentrators comprise surface grooves formed in the surfaces of at least one of the first and second tubular members.

24. The assembly of claim 22, wherein the stress concentrators are defined above the

internal and external threads of the first and second tubular members.

25. A method for forming a wellbore casing, comprising:
positioning an assembly within a borehole that traverses a subterranean formation; and
radially expanding and plastically deforming the assembly within the borehole;
wherein the assembly comprises:
a first tubular member comprising external threads;
a second tubular member comprising internal threads coupled to the external threads of the first tubular member; and
an external sleeve coupled to and overlapping with the ends of the first and second tubular members;
wherein at least one of the first and second tubular members define one or more stress concentrators.

26. An apparatus, comprising:
a wellbore that traverses a subterranean formation; and
a wellbore casing positioned within and coupled to the wellbore;
wherein the wellbore casing is coupled to the wellbore by a process comprising:
positioning an assembly within a borehole that traverses a subterranean formation; and
radially expanding and plastically deforming the assembly within the borehole;
wherein the assembly comprises:
a first tubular member comprising external threads;
a second tubular member comprising internal threads coupled to the external threads of the first tubular member; and
an external sleeve coupled to and overlapping with the ends of the first and second tubular members;
wherein at least one of the first and second tubular members define one or more stress concentrators.

27. A system for forming a wellbore casing, comprising:
means for positioning an assembly within a borehole that traverses a subterranean formation; and
means for radially expanding and plastically deforming the assembly within the borehole;
wherein the assembly comprises:
a first tubular member comprising external threads;
a second tubular member comprising internal threads coupled to the external threads of the first tubular member; and

an external sleeve coupled to and overlapping with the ends of the first and second tubular members;

wherein at least one of the first and second tubular members define one or more stress concentrators.

28. An assembly, comprising:

a first tubular member comprising external threads; and

a second tubular member comprising internal threads coupled to the external threads of the first tubular member;

wherein the first and second tubular members each define one or more stress concentrators.

29. The assembly of claim 28, further comprising:

an external sleeve coupled to and overlapping with the ends of the first and second tubular members.

30. The assembly of claim 28, wherein one or more of the stress concentrators comprise surface grooves formed in the surfaces of at least one of the first and second tubular members.

31. The assembly of claim 28, wherein the stress concentrators are defined above the internal and external threads of the first and second tubular members.

32. A method for forming a wellbore casing, comprising:

positioning the assembly of claim 28 within a borehole that traverses a subterranean formation; and

radially expanding and plastically deforming the assembly within the borehole.

33. A method for forming a wellbore casing, comprising:

positioning the assembly of claim 29 within a borehole that traverses a subterranean formation; and

radially expanding and plastically deforming the assembly within the borehole.

34. A method for forming a wellbore casing, comprising:

positioning the assembly of claim 30 within a borehole that traverses a subterranean formation; and

radially expanding and plastically deforming the assembly within the borehole.

35. A method for forming a wellbore casing, comprising:
positioning the assembly of claim 31 within a borehole that traverses a subterranean formation; and
radially expanding and plastically deforming the assembly within the borehole.

36. An apparatus, comprising:
a wellbore that traverses a subterranean formation; and
a wellbore casing positioned within and coupled to the wellbore;
wherein the wellbore casing is coupled to the wellbore by a process comprising:
positioning the assembly of claim 28 within the wellbore; and
radially expanding and plastically deforming the assembly within the wellbore.

37. An apparatus, comprising:
a wellbore that traverses a subterranean formation; and
a wellbore casing positioned within and coupled to the wellbore;
wherein the wellbore casing is coupled to the wellbore by a process comprising:
positioning the assembly of claim 29 within the wellbore; and
radially expanding and plastically deforming the assembly within the wellbore.

38. An apparatus, comprising:
a wellbore that traverses a subterranean formation; and
a wellbore casing positioned within and coupled to the wellbore;
wherein the wellbore casing is coupled to the wellbore by a process comprising:
positioning the assembly of claim 30 within the wellbore; and
radially expanding and plastically deforming the assembly within the wellbore.

39. An apparatus, comprising:
a wellbore that traverses a subterranean formation; and
a wellbore casing positioned within and coupled to the wellbore;
wherein the wellbore casing is coupled to the wellbore by a process comprising:
positioning the assembly of claim 31 within the wellbore; and
radially expanding and plastically deforming the assembly within the wellbore.

40. A system for forming a wellbore casing, comprising:
means for positioning the assembly of claim 28 within a borehole that traverses a subterranean formation; and
means for radially expanding and plastically deforming the assembly within the borehole.

41. A system for forming a wellbore casing, comprising:

means for positioning the assembly of claim 29 within a borehole that traverses a subterranean formation; and

means for radially expanding and plastically deforming the assembly within the borehole.

42. A system for forming a wellbore casing, comprising:

means for positioning the assembly of claim 30 within a borehole that traverses a subterranean formation; and

means for radially expanding and plastically deforming the assembly within the borehole.

43. A system for forming a wellbore casing, comprising:

means for positioning the assembly of claim 31 within a borehole that traverses a subterranean formation; and

means for radially expanding and plastically deforming the assembly within the borehole.

44. A method of providing a fluid tight seal between a pair of overlapping tubular members, comprising:

forming one or more stress concentrators within each of the tubular members; and

radially expanding and plastically deforming the tubular members.

45. The method of claim 44, wherein the tubular members are threadably coupled; and wherein the stress concentrators are formed above the threaded coupling.

46. The method of claim 44, wherein the stress concentrators comprise surface grooves formed in at least one of the tubular members.

47. A method of providing a fluid tight seal between a pair of overlapping tubular members, comprising:

concentrating compressive stresses onto the overlapping portions of the tubular members; and

radially expanding and plastically deforming the tubular members.

48. The method of claim 47, wherein the tubular members are threadably coupled; and

wherein the compressive stresses are concentrated onto the threaded coupling during the radial expansion and plastic deformation.